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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/509,656

09/29/2004

Toshio Goto

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EXAMINER

KACKAR, RAM N

ART UNIT

PAPER NUMBER

1763

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/509,656	Applicant(s) GOTO ET AL.	
	Examiner Ram N. Kackar	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-2, 7, 16 and 17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over O'Neill et al (US 5770097) as evidenced by Blazey et al (US 6527730) or Kaneko et al (US 5749830).**

O'Neill et al disclose a processing apparatus (Fig 1) which accommodates a target object (22), ultraviolet light generating means (52), ultraviolet light receiving means (66), analysis/control means (78, 86) using uv absorption spectroscopy (Abstract) and chopper for intermittently outputting uv (68).

Regarding the limitation of intermittently outputting the ultraviolet light with a presence/absence signal and further regarding calculation of difference between presence and absence signal, this is the standard and inherent way a chopper works with a lock-in amplifier. Chopper and lock-in amplifier is used to improve signal/noise ratio by reducing or eliminating noise from the signal (Col 5 lines 1-12). This is advantageous especially if the signal is weak.

Blazey et al teach this conventional teaching in Fig 3 where the lock-in amplifier (50) gets the reference signal in parallel from a chopper (65) so that noise from signal-noise may be eliminated to extract only signal.

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Similarly Kaneko et al disclose a chopper (Fig 11-70 and Col 17 lines 9-26) producing odd (153a) and even (153b) frames and a difference calculating circuit (154) finds the difference to cancel noise components (Col 78 line 63 to Col 79 line3).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-2, 7, 16 and 17 are rejected under 35 U.S.C. 103(a) as unpatentable over Article Kono Akihiro "Plasma Absorption Spectroscopy Using Micro discharge Light Source" (May 2000) as evidenced by Blazey et al (US 6527730) or Kaneko et al (US 5749830).**

Kono Akihiro et al disclose a processing apparatus (Fig 3), On-Off modulated ultraviolet light generating means (MHCL, ultraviolet light receiving means, analysis/control means using uv absorption spectroscopy (Abstract), which inherently accommodates a target object.

As discussed above newly added limitations to claim1 are inherent.

5. **Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill et al (US 5770097) as evidenced by Blazey et al (US 6527730) or Kaneko et al (US 5749830) in view of Pinsukanjana et al (US 5936716).**

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O'Neill et al disclose all the limitations of these claims except multiple optical paths having different modulation frequencies.

Pinsukanjana et al disclose multi-channel atomic absorption spectroscopy with dedicated modulators at different frequencies and dedicated detectors with lock-in amplifiers (Abstract, Fig 1-Fig 23, Col 3 lines 26-37 and Col 5 lines 22-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have multi-channel optical paths for spatial detection and/ or species distribution in the detection environment.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill et al (US 5770097) as evidenced by Blazey et al (US 6527730) or Kaneko et al (US 5749830) in view of Yoshida et al (JP 06293960A).

O'Neill et al disclose all the limitations of these claims except disclose that the window is heated.

However controlling the window temperature to inhibit condensation on window would have been obvious to one of ordinary skill in the art at the time of invention as taught by Yoshida et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have the detection window heated to avoid condensation and clouding of the window.

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7. Claims 4 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill et al (US 5770097) as evidenced by Blazey et al (US 6527730) or Kaneko et al (US 5749830) in view of Yoshihiro Deguchi (JP 09210909).

O'Neill et al disclose all the limitations of these claims except disclose measurement of molecular temperature of plasma.

Yoshihiro Deguchi discloses concentration and molecular temperature measurement by using a pulsed (modulated) laser with a synchronization signal (Abstract) and teaches that this provides enhanced accuracy of measurement.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have a measurement of molecular temperature for enhanced accuracy.

8. Claims 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill et al (US 5770097) as evidenced by Blazey et al (US 6527730) or Kaneko et al (US 5749830) in view of Yoshihiro Deguchi (JP 09210909) as applied to claims 4 and 8-12 and further in view of Pinsukanjana et al (US 5936716).

O'Neill et al in view of Yoshihiro Deguchi disclose all the limitations of these claims except multiple optical paths having different modulation frequencies.

Pinsukanjana et al disclose multi-channel atomic absorption spectroscopy with dedicated modulators at different frequencies and dedicated detectors with lock-in amplifiers (Abstract, Fig 1-Fig 23, Col 3 lines 26-37 and Col 5 lines 22-65).

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Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have multi-channel optical paths for spatial detection and/ or species distribution in the detection environment..

9. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill et al (US 5770097) as evidenced by Blazey et al (US 6527730) or Kaneko et al (US 5749830) in view of Yoshihiro Deguchi (JP 09210909) as applied to claims 4 and 8-12 and further in view of Yoshida et al (JP 06293960A).

O'Neill et al in view of Yoshihiro Deguchi disclose all the limitations of these claims except disclose that the window is heated.

However controlling the window temperature to inhibit condensation on window would have been obvious to one of ordinary skill in the art at the time of invention as taught by Yoshida et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have the detection window heated to avoid condensation and clouding of the window.

Response to Arguments

10. Applicant's arguments filed 4/13/2007 have been fully considered but they are not persuasive.

Applicant's arguments in regards to limitations of claim 3 have been addressed as being inherent in a combination of a chopper and lock-in amplifier.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ram Kackar

Primary Examiner AU 1763